REMARKS

Applicant is in receipt of the Office Action mailed November 21, 2006. Claims 1, 2, 19, 20, and 21 have been amended. Claims 1-21 remain pending in the case. Reconsideration of the present case is earnestly requested in light of the following remarks.

Claim Amendments

As noted above, claims 1, 2, 19, 20, and 21 have been amended. Applicant respectfully notes that while the entering of amendments after Final Rejection is not guaranteed, per 37 C.F.R. 1.116, "Amendments presenting rejected claims in better form for consideration on appeal may be admitted". Applicant has amended the claims as indicated above to place the claims into better form for consideration on appeal (and to address an objection by the Examiner), and respectfully requests that the amendments be entered.

Objections

Claim 2 was objected to for grammatically incorrect wording. The Examiner also indicated redundant language regarding signal types. Claim 2 has been amended to remove the incorrect language, as well as the redundancy regarding signal types referred to by the Examiner. Removal of the objection to claim 2 is earnestly requested.

Section 112 Rejections

Claims 1-21 were rejected under 35 U.S.C. 112, second paragraph, for being indefinite. Applicant has amended independent claims 1, 19, 20, and 21 to clarify that the first input signal provided by the input signal source is used *as the input signal for the first operation*. In other words, the first input signal (provided by the determined prior operation) is useable by the first operation as an input signal. Applicant notes that no new matter was added and respectfully submits that the claims as currently amended are definite. Applicant respectfully requests removal of the section 112 rejection of claim 1-21.

Section 102 Rejections

Claims 1-21 were rejected under 35 U.S.C. 102(e) as being anticipated by Hoffberg et al. (US Pat. Pub. US 2002/0151992 A1, "Hoffberg"). Applicant respectfully disagrees.

Applicant respectfully submits that there are numerous features and limitations of claim 1 that are not taught or suggested by Hoffberg.

Amended claim 1 recites:

1. A memory medium comprising program instructions for specifying a signal analysis function, wherein the memory medium is in a computer system comprising a display, wherein the program instructions are executable to implement:

receiving user input specifying a first operation, wherein the first operation implements at least a portion of a signal analysis function, and wherein the first operation requires an input signal;

automatically analyzing prior operations specified by the user, wherein one or more of the prior operations is operable to generate a respective signal, thereby operating as a signal source, wherein said analyzing the prior operations determines one of the prior operations as an input signal source for the first operation, wherein the input signal source provides a first input signal to be used as the input signal for the first operation;

performing the first operation on the first input signal received from the input signal source, wherein said performing produces an output signal;

displaying the output signal on the display; and

performing said automatically analyzing, said performing, and said displaying for each of a plurality of first operations input by the user.

As discussed in the previous Response, Hoffberg teaches an adaptive interface for predicting a desired user function based on user history and internal machine status, such as for a pattern recognition system. The system of Hoffberg receives an input from the user and presents a predicted input for confirmation by the user, updating the predictive mechanism based on this feedback (Abstract). As a more specific example, as described

in paragraph [0886], Hoffberg provides “a control wherein the user input processing system monitors a pattern of user activity and predicts a viewer preference”. As another example, in [0933] Hoffberg describes “The interface may be advantageously applied to an operational system which has a plurality of functions, certain of which are unnecessary or are rarely used in various contexts, while others are used with greater frequency. In such systems, the application of functionality may be predictable. Therefore, the present technologies provide an optimized interface system which, upon recognizing a context, dynamically reconfigures the availability or ease of availability of functions and allows various functional subsets to be used through "shortcuts". The interface presentation will therefore vary over time, use and the particular user”. In other words, Hoffberg processes historical and state information and, based on user input, adaptively modifies an interface by predicting what features or functions the user is likely to use.

In contrast to Hoffberg, the amended claim 1 presents a system for a user-specified signal analysis function, where the user specifies a first operation, and where the system automatically analyzes prior operations to determine and assign a proper input source for the first operation (from among prior operations). The one or more prior operations of claim 1 each generate a respective signal, which may or may not be suitable for use as the input signal to the first operation. When the user specifies the first operation, the prior operations specified by the user are automatically analyzed to determine one of the prior operations to use as an input source for the first operation. In other words, the prior operations (operating as signal sources) are automatically analyzed to determine a prior operation that generates a signal that is useable as input for the first operation. As described on p.9:16-18, “In other words, operations that have already been specified previously by the user may be analyzed to find an operation that provides an output signal suitable for use as input to the first operation.”

Applicant notes that as used in the present application, the term “operation” refers to a function or action to be performed, particularly regarding signal analysis (including signal generation, measurement, processing, etc.). For example, on p.6:2-7:6, the Specification describes an embodiment where the user specifies various signal operations to be performed by selecting function blocks via a graphical user interface (GUI):

> A plurality of function blocks are described for use in specifying and performing a signal analysis function utilizing a plurality of instruments, and a method presented for automatically configuring function blocks selected for inclusion in a plurality of functions blocks specifying or representing a signal analysis function. In one embodiment, each function block may include: a function block icon operable to be displayed in a graphical user interface (GUI) of a signal analysis function development environment, **where the function block icon visually indicates a respective signal operation, and a set of program instructions associated with the function icon, where the set of program instructions are executable to perform the respective signal operation, possibly in conjunction with associated hardware**.
>
> In a preferred embodiment, each function block is selectable from the plurality of function blocks by a user for inclusion in a set of function blocks, wherein each function block operates to perform the respective signal operation continuously upon being selected. Each function block may be operable to provide a respective output based on the respective signal operation, where the respective output is operable to be displayed in the GUI, provided as input to one or more other ones of the set of function blocks, and/or exported to an external device. The set of function blocks may be executable to perform the signal analysis function under the signal analysis function development environment using one or more of the plurality of instruments. **Signal operations may be organized by function categories, such as (but not limited to): Create, I/O, Conditioning, Measurement, Processing, File, Test, and Conversion, among others**. (*emphasis added*)

p. 6:27 – 7:6

> In one embodiment, each function block may be selectable from the plurality of function blocks by a user for inclusion in a set of function blocks, where each function block operates to perform the respective signal operation continuously upon being selected. **For example, the user may select a first function block from a palette, menu, etc., in response to which the respective signal operation may be performed**, preferably executing in a continuous manner until, for example, a stopping condition occurs or the user pauses or terminates the process. The user may then select one or more additional function blocks, which may similarly begin continuous respective operations in conjunction with the first function block. (*emphasis added*)

Applicant notes that the Specification describes numerous examples of signal operations that clearly indicate that an operation is a function or action that is performed. For example, p.35:14-17 reads:

> For example, if the graph included a power spectrum for a signal, and the power spectrum plot or icon were selected to invoke the operation options, only those operations suitable for application to a power spectrum may be presented, e.g., **determining a strongest frequency, average power, etc.** (*emphasis added*)

Beginning on p.35:28, the Specification includes a section specifically devoted to describing signal operations. For example, p.36:1-10 reads:

> The selectable operations mentioned above may include any type of operation related to signals. For example, the operations contemplated may include: **generating one or more signals, e.g., by reading one or more signals from a file, and/or synthesizing one or more signals algorithmically; receiving one or more signals from an external source; sending one or more signals to an external system; analyzing one or more signals and generating results based on the analysis; displaying one or more signals; displaying results of another operation; processing one or more signals, thereby generating one or more modified signals; and storing one or more signals, among others. In other words, the operations may include signal generation, acquisition, analysis, processing, storage, import, export, or transmission, among others**. (*emphasis added*)

More specifically, a more detailed list of signal operations in various categories may be found in the Specification at p.46:10 – p.49:24, here quoted (*emphasis added*):

> Function Blocks (Signal Operations)
>
> As noted above, in some embodiments, the icons and operations may comprise or be comprised in function blocks, where each function block provides a respective specified operation and is represented by a respective icon. **A list of signal operations organized by function categories follows. Note that the operations presented are meant to be exemplary only, and are not intended to limit the operations to any particular set or domain.** Examples of function blocks and their use are illustrated in Figures 8A – 8I, and described below.
>
> Create
>
> Basic Function – Create a signal waveform such as sine tone, square wave or noise.
>
> Multisine – Create a signal waveform composed of a number of sine tones.
>
> IO
>
> Acquire Analog
>
> DMM – Single point measurement of DC and AC values.

Scope – Multiple channels waveform acquisition using a Digitizer board.

EMIO-AI – Multiple channels waveform acquisition using an EMIO board.

SMIO – Multiple channels waveform acquisition using an SMIO board.

Generate Analog

Function Generator – Continuous generation of a standard function waveform, such as sine tone or square wave.

Arbitrary Waveform Generator – Generation of an arbitrary waveform such as, for example, create by the Basic Function block.

EMIO-AO – Generation of an arbitrary waveform such as, for example, create by the Basic Function block.

SMIO-AO – Generation of an arbitrary waveform such as, for example, created by the Basic Function block.

Generate Digital

DIO-DO – Continuous generation of digital patterns such as, for example, created by the Analog to Digital block.

Acquire Digital

DIO-DI – Continuous acquisition of digital patterns for example, to be converted to waveform using the Digital to Analog block.

Conditioning

Arithmetic – Performs simple operations such as addition, multiplication or E-norm on two signals. This polymorphic block supports both time domain and frequency domain signals.

Filter – Performs filtering on one or more time domain waveforms.

Resample – Resamples time domain or frequency domain signals to user defined conditions.

Scaling – Applies user defined gain and offset to a signal. This polymorphic block supports both time domain and frequency domain signals.

Window – Applies a window to a time domain waveform.

Averaging – Performs averaging on time or frequency domain signals as well as scalar values.

Subset – Extracts a signal subset. This polymorphic block supports both time domain and frequency domain signals.

Scalar Processing – Performs formula node based operation (e.g., log, exp, sin, cos, etc.) on a scalar or array of scalars.

Graph Align – Allows the user to manually (graphically) or automatically align two waveforms and returns the applied (or needed) scaling parameters.

Measurement

DC-RMS – Returns the DC and RMS values of an input signal. This block may operate on both time domain waveforms and Power or Magnitude Spectra.

Distortion – Measures and returns various distortion values such as THD or specific harmonics for an input time domain waveform.

Histogram – Computes the histogram of a signal. This polymorphic block supports both time domain and frequency domain signals.

Tone Extraction – Extracts single tones from input time domain waveforms and returns various scalar information such as frequency, amplitude and phase, as well as reconstructed time domain or frequency domain signals.

Processing

Frequency Domain

Power Spectrum – Computes the Power Spectrum of an input time domain waveform.

Frequency Response – Computes the frequency response of a system based on two time domain waveforms representing the system excitation and response signals.

File

Import from File – Imports a signal or a group of signals from file. This polymorphic block supports both time domain and frequency domain signals.

Export to File – Exports a signal or a group of signals to file. This polymorphic block supports both time domain and frequency domain signals.

Test

Test Blocks – Various blocks for performing tests on signals. Each block typically returns a Boolean specifying whether the test has passed or failed.

Conversion (Tools)

Analog to Digital Conversion – Converts a time domain waveform to a digital signal with associated timing. The format can be serial or parallel according to specific standard formats such as SPI. This block preferably directly feeds a DIO board.

Digital to Analog Conversion – Converts a serial or parallel digital signal to a time domain waveform. The format can be serial or parallel according to specific standard formats such as SPI. This block preferably consumes data acquired using a DIO board.

Conversion Blocks – Various blocks for performing conversion operations on signals or scalar values:

> Add / Remove tags.
> Convert from/to WDT from/to clusters.
> Build WDT or cluster from array of scalars.
> Group/ungroup signals.

Thus, Applicant respectfully submits that in light of the Specification, the operations claimed are specified functions or actions to be performed with respect to signals.

Applicant respectfully notes that Hoffberg does not teach programmatically (i.e., automatically) analyzing prior operations input by the user to *determine an input source for the first operation, wherein the input source provides a first input signal to be used as the input signal for the first operation*. In fact, Hoffberg fails to disclose programmatic determination of an input source for an input signal at all. Applicant respectfully notes that in Hoffberg's system, the sources for data/images/signals are all known, and thus Hoffberg actually teaches away from claim 1. The Examiner asserts that "the first operation would necessarily require an input signal if it were to be performed on in order to produce an output, so the additional reference to this amended language is redundant [sic]". Applicant respectfully notes that an operation that generates or specifies a signal, e.g., to stimulate a unit under test, may not require an input signal, and so submits that the previous amendment "wherein the first operation requires an input signal" is not redundant.

Citing paragraph [0888], the Examiner further asserts that "an image processor as a function of characterization data produces a signal corresponding to image types of the characterization data [sic]", and states that "the Examiner considers this to be an operation that operates to generate a respective signal". The Examiner then asserts that "this is performed prior to an operation with user input specifying the operation which implements at least a portion of a signal analysis function that produces an output, with respect to the adaptable programmable apparatus of paragraph 0891", and asserts that this teaches all the features and limitations of claim 1. Applicant respectfully disagrees.

Cited paragraph [0888] reads thusly:

> [0888] According to another aspect of the invention, it is an object to provide an image information retrieval apparatus, comprising a memory

> for storing compressed data representing a plurality of images; a data storage system for retrieving compressed data representing at least one of the plurality of images and having an output; a memory for storing characterization data representing a plurality of image types, having an output; and an image processor, receiving as inputs the outputs from the data storage system and the characterization data memory, and producing a signal corresponding to a relation between at least one of the plurality of images of the compressed data and at least one of the image types of the characterization data.

Applicant respectfully notes that [0888] describes an image processor that receives input from a data storage system, as well as input from a characterization data memory, and produces a signal based on these inputs. Applicant agrees that the operation of [0888] does generate a signal based on inputs, but notes that in this case the input sources are already known, specifically, the data storage system and the characterization data memory. Thus, the operation of [0888] cannot be considered to correspond to the first operation of claim 1, since the input signal sources for the operation of [0888] are known. Applicant thus assumes that the Examiner considers the operation of [0888] to correspond to a *prior operation* in claim 1. However, Applicant notes that in claim 1, there are multiple prior operations (which are analyzed), and so this correspondence is not proper, since the operation of [0888] is singular. In other words, if the operation of [0888] is considered a prior operation that provides a signal that can be used as input to a subsequent operation, then, since there is only one operation (that of [0888]) to use as a signal source, no analysis would be required to determine a signal source for the subsequent operation.

Regarding the cited paragraph [0891], the Examiner appears to assert that performing the operation described in [0888] prior to performing the functionality described in paragraph [0891] somehow teaches all the features and limitations of claim 1. Applicant respectfully disagrees.

Cited paragraph [0891] reads thusly:

> [0891] It is another object of the present invention to provide an adaptive programmable apparatus having a plurality of states, being programmable by a programmer and operating in an environment in which a plurality of possible events occur, each of the events being associated with different data, comprising an data input for receiving data; an programmer input, producing an input signal from the programmer; a memory for storing data

> relating to the data input or the input signal; a feedback device for adaptively providing information relating to the input signal and a current status of the apparatus to the programmer, based on the data input or the programmer input, the stored data, and derived weighing of at least a subset of possible choices, the derived weighing being based on a history of use, a context of a respective choice and the current status of the apparatus; a memory for storing programming data associated with the input signal; and a processor, having a control output, for controlling the response of the apparatus relating to the detection of the input signal or the data in accordance with the stored programming data, the processor: (a) processing the at least one of the input signal or the data to reduce an amount of information while substantially retaining an abstract portion of the information; (b) storing a quantity of the abstracted information: (c) processing the abstract portion of the information in conjunction with the stored quantity of abstracted information; and (d) providing the control output based on the processed abstract portion of the information and the stored programming data. The apparatus may further comprise an input for receiving a programming preference from the programmer indicating a plurality of possible desired events; the processor further including a correlator for correlating the programming preference with the data based on an adaptive algorithm and for determining a likelihood of occurrence of at least one of the desired events, producing the control output. The apparatus may further comprise an input for receiving feedback from the programmer indicating a concurrence with the control output of the processor, and modifying the response control based on the received feedback to increase a likelihood of concurrence. The apparatus may still further verify the programming data to ensure that the programming data comprise a complete and consistent set of instructions; and include a feedback system for interactively modifying the programming data. The apparatus may also comprise a chronological database and an accessing system for accessing the chronological database on the basis of the programming data stored in the memory.

As may be seen, [0891] is directed to a system that adaptively modifies a control output for controlling an apparatus based on input from specified sources, specifically, "based on the data input or the programmer input, the stored data, and derived weighing of at least a subset of possible choices, the derived weighing being based on a history of use, a context of a respective choice and the current status of the apparatus."

However, as argued in the previous Response, nowhere does Hoffberg teach or suggest automatically determining a prior operation that provides a signal that is usable by a first operation specified by a user.

In the Response to Arguments, the Examiner notes that Hoffberg discloses "the use of adaptive prediction based on the history of use regarding a user with respect to an image type", and that "a signal is produced that corresponds to a relation between at least one of a plurality of images of compressed data [and] at least one of the image types of characterization data", where "this signal is what is being analyzed in the first operation". The Examiner then asserts that the *image type* is considered to be an input *source* for this operation, which Applicant respectfully submits is incorrect.

Applicant respectfully submits that one of skill in the art of signal analysis readily understands that: 1) a signal type is a category or description of a signal, *not* a source of a signal, since a signal type cannot generate or otherwise provide a signal, and 2) a signal type, being a category or description of a signal, is not and cannot be an operation. Applicant respectfully directs the Examiner's attention to the following portion of claim 1: "wherein one or more of the prior operations is operable to generate a respective signal, thereby operating as a signal source, wherein said analyzing the prior operations determines one of the prior operations as an input signal source for the first operation, wherein the input signal source provides a first input signal to be used as the input signal for the first operation". As this portion of claim 1 makes clear, it is the *one or more of the prior operations* that operate a signal sources. Applicant respectfully submits that while an operation may operate *based* on a signal type, the signal type is not itself an operation.

In the Response to Arguments, the Examiner indicates that he does not understand how Hoffberg's knowing the input sources teaches away from Applicant's invention as represented by claim 1. Applicant respectfully submits that in Applicant's invention (as represented by claim 1), the input signal source (which is a prior operation) for the first operation is automatically determined *from among the prior operations*, whereas in Hoffberg, according to the Examiner's characterization, the source of the input signal for the adaptive process is known, being, as described above, the operation of [0888]. Alternatively, if the input signal sources for the adaptive process are considered to be "the data input or the programmer input, the stored data, and derived weighing of at least a subset of possible choices", as described in [0891], then these input signal sources are

similarly already known, and thus do not need to be automatically determined from among a set of prior operations.

The Examiner asserts that "while some data/images/signals may be known, specific ones with respect to a future iteration of an adaptive process based on feedback are not known, until they are determined before the next iteration". Applicant respectfully submits that, as argued previously, at the time that Hoffberg's adaptive process is invoked, the sources for all input signals to the process are known, and thus, Hoffberg's signal source(s) for the adaptive process are not automatically determined by analyzing prior operations specified by the user.

For at least the above reasons, Hoffberg does not disclose each and every element of claim 1 as required by *Lindemann Maschinenfabrik GmbH* for an anticipation rejection. Thus, for at least the reasons provided above, Applicant submits that claim 1 and those claims dependent therefrom are patentably distinct and non-obvious over Hoffberg, and are thus allowable.

Independent claims 19, 20, and 21 include similar limitations as claim 1, and so the above arguments apply with equal force to these claims. Thus, for at least the reasons provided above, Applicant submits that claims 19, 20, and 21 and those claims respectively dependent therefrom are patentably distinct and non-obvious, and are thus allowable.

Applicant also asserts that numerous ones of the dependent claims recite further distinctions over the prior art However, since the independent claims have been shown to be patentably distinct, a further discussion of the dependent claims is not necessary at this time.

Applicant respectively requests removal of the section 102 rejection of claims 1-21.

CONCLUSION

In light of the foregoing amendments and remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above-referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. The Commissioner is hereby authorized to charge any fees which may be required or credit any overpayment to Meyertons, Hood, Kivlin, Kowert & Goetzel P.C., Deposit Account No. 50-1505/5150-82400/JCH.

Also filed herewith are the following items:

☐ Request for Continued Examination

☐ Terminal Disclaimer

☐ Power of Attorney By Assignee and Revocation of Previous Powers

☐ Notice of Change of Address

☐ Other:

Respectfully submitted,

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